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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/619,305

07/14/2003

Yusuke Tamaki

35859

6316

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7590

03/03/2006

PEARNE & GORDON LLP

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CLEVELAND, OH 44114-3108

EXAMINER

MENEFEE, JAMES A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/619,305

Applicant(s)

TAMAKI ET AL.

Examiner

James A. Menefee

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2 and 8-10 is/are allowed.
- 6) ☒ Claim(s) 11-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

In response to the amendment filed 12/14/2005, the specification and claims 1, 8, and 10 are amended, a new sheet of drawings is received and is accepted, and claims 11-15 are added.

Claims 3-7 are cancelled. Claims 1-2 and 8-15 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims each recite the limitation "said cooling holder," which lacks antecedent basis in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheps (US 5,682,397). See Fig. 1 and discussion thereof.

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Regarding claim 11, Scheps discloses a laser oscillator comprising an excitation beam source 12 generating an excitation beam, a lasing medium 10 receiving the excitation beam for amplifying light, a laser oscillator (between reflecting face 10e and output mirror 15) inducing resonance of light to produce laser oscillation, and a cooling system 13 for cooling the cooling medium. The cooling system is disclosed as using helium at 6.7 K, col. 6 lines 46-48, and therefore the cooling system uses gas (applicant admits the evaporation temperature of helium is 4.7 K) having a temperature of less than 70 K.

Regarding claim 12, as noted above the lasing medium is cooled to 6.7 K, which is less than the evaporation temperature of liquid nitrogen (admitted by applicant as about 77 K).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art ("APA", see Figs. 1-2) in view of Kuhn (US 4,563,763).

Regarding claim 11, APA discloses in Fig. 1 a laser oscillator comprising an excitation beam source generating an excitation beam 120, a lasing medium 110 receiving the excitation beam for amplifying light, a laser oscillator between the reflectors for inducing resonance of light emitted from the lasing medium to perform laser oscillation, and a cooling system 180 for cooling the lasing medium.

APA concerns liquid cooling media, therefore the gas cooling system is not disclosed. Kuhn teaches that liquid coolants may create problems with thermal lensing and coolant boiling off (i.e. similar problems as noted in the present specification) and goes on to describe a gas cooled laser. Col. 1 lines 30-44. It would have been obvious to one skilled in the art to utilize gas cooling for the laser in order to avoid those problems noted in Kuhn.

Further regarding claim 11, and regarding claim 12, Kuhn's gas coolant is helium, and Kuhn contemplates that the coolant is at less than 70 K and cools to a temperature lower than the evaporation temperature of liquid nitrogen. See Fig. 5 showing temperatures.

Regarding claim 13, APA shows in Fig. 2 that there may be cooling holder 220 made of copper.

Regarding claim 14, the lasing medium of APA may be Ti:sapphire. p. 2 line 8.

Regarding claim 15, it is not disclosed that the lasing medium is attached to the cooling holder. However, this is known in the art and it would have been obvious to do so because if the pieces are left loose then damage or misalignment from movement could easily occur. All of the named means of attachment are known adhesives. It would have been obvious to one skilled in the art to use any of these adhesives, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960).

Response to Arguments

Applicant's arguments filed 12/14/2005 ("Response") have been fully considered but they are not wholly persuasive.

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Applicant's arguments regarding the rejections of claim 1 as amended, Response at 7-8, are persuasive. See Reasons for Allowance below.

Applicant's arguments regarding new claim 11, Response at 8-9, are not persuasive. Applicant argues that the prior art does not teach the limitation regarding the gas having a temperature less than 70 K. The examiner fails to see how Scheps does not teach this, as noted in the above rejection of claim 11, which is substantially the same as the rejection of claim 1 in the prior action. The limitation also appears to be taught by Kuhn as noted above. The altered rejections are based only on applicant's amendment therefore this action is made final.

Allowable Subject Matter

Claims 1-2 and 8-10 are allowed. The following is an examiner's statement of reasons for allowance:

There is not taught or disclosed in the prior art a laser as claimed that includes a cooling system using a gas as the heat carrying medium, the cooling system having a cooling holder for cooling the lasing medium that is in the shape of a tube having openings on both ends and housing the lasing medium and contacting the lasing medium only at a single surface.

Note too that the examiner substantially agrees with applicant's arguments of 12/14/2005 as to why the prior art used previously does not meet claim 1.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'James Menefee', with a large, stylized initial 'J'.

James Menefee
February 28, 2006